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Original Article

Plantar warts, more than a nuisance: Assessment of Dermatology Life Quality Index in patients with plantar warts

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Abstract

Objective Plantar warts (PW) are a benign skin infection of keratinocytes caused by Human Papilloma Virus that can cause significant morbidity leading to an impairment of quality of life (QoL). The objective of this study was to determine the mean Dermatology Life Quality Index (DLQI) in patients with plantar warts.

Methods 98 patients were enrolled in this cross-sectional survey conducted in Jinnah Hospital, Lahore. DLQI was determined for each enrolled patient.

Results Mean DLQI score was found to be 9.4±5.4 which falls in the category of moderate impairment of QoL.

Conclusion PW cause significant morbidity leading to a moderate to severe impairment of DLQI in about two thirds of the cases, especially in young, male and educated subjects with chronic PW.

Key words
Plantar warts (PW); Dermatology Life Quality Index (DLQI), Health related Quality of Life (HrQOL), Quality of Life (QoL).

Introduction

Warts are a commonly occurring benign skin condition caused by infection of keratinocytes by Human Papilloma Virus (HPV).[1] Although infection is more prevalent in early age, they can occur at any age. The global prevalence rate of warts is 10% with equal infection rates in both genders.[2] Plantar warts (PW) are the second most common type of warts comprising 23-24% of all types. However, they are the most frequent type in children and young adolescents, occurring rarely in infants and children less than 5 years of age.

PW are commonly diagnosed clinically and present as painful, raised, rough, firm, hyperkeratotic lesions on plantar aspect of feet including lateral aspects and nail units of the toes.[1] Lesions are hyperkeratotic papules, plaques or occasionally raised nodular lesions sometimes with surrounding redness. PW may have an endophytic growth pattern called 'mosaic pattern' or 'myrmecia warts' that occur when groups of small warts grows in close

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proximity.[3] Occasionally, in cases with ambiguous clinical features or for research purposes some investigations may be undertaken to confirm PW, such as histopathology or polymerase chain reaction for HPV DNA.[4]

The clinical course of PW is benign and many resolve over time.[5] However, PW can cause significant morbidity in the affected individuals, both physically and psychologically, especially when present on weight bearing areas of the foot.[6] Several researchers have documented that PW are an important and frequent cause of moderate to severe impairment of the patient's health related quality of life (HrQOL). Salah from Egypt documented that PW caused significant negative impact on quality of life (QoL) of affected individuals.[7] These include pain, social embarrassment and difficulty in social or recreational activities. Furthermore, Leow and Oon from Singapore reported that PW are a source of significant frustration due to their recalcitrant nature and high risk of recurrence.[8] Additionally, a recent review by Iranian researchers pointed out the various treatment related adverse impacts of cutaneous warts.[9]

PW are common in the general population and can have a significant negative psycho-social impact, but, the main focus of wart-related QoL research have been genital viral warts. The present study was undertaken to quantify the impact of PW using mean Dermatology Life Quality Index (DLQI) score. To the best of our knowledge, no data is available focusing exclusively on the impact of PW on QoL in the local or international literature. The present research will help dermatologists and other healthcare professionals to acknowledge the need of psychological and social support of patients with PW early in the course of disease and develop a patient-centred approach.

Methods

A cross-sectional survey was conducted from March 2019 to September 2019 in Dermatology Unit 1, Jinnah Hospital, Lahore, Pakistan. After permission from hospital ethical committee, 98 patients with PW and having no other co-morbid medical condition were included in the study. The demographic data and relevant clinical data was recorded in a predesigned proforma. The valid translated Urdu version of dermatology life quality index questionnaire was filled.[10] DLQI was recorded for each patient and mean DLQI was calculated at the end. Data was carefully processed and analysed using SPSS version 22. Categorical data were described as percentages and frequencies, and quantitative variables were expressed as Mean and Standard Deviation. DLQI was stratified by age, gender, duration, economic, marital and educational status. Univariate analysis was done post-stratification. The statistical values for T-test, ANNOVA and Pearson's correlation were recorded as t-values, F-values and r-value respectively while considering p value ≤ 0.05 as significant.

Results

Among the 98 patients, about three-quarters (74.5%) belonged to the age group of 16-30 years. Whereas 14.3%, 6.1% and 4.1% were in the age groups 31-40 years, 41-50 years and 51-60 years respectively. The age range of the subjects was 16 to 58 years. **Table 1** shows the demographic and clinical features of the study cohort.

DLQI score was calculated for all patients ranging from 0-30. Mean DLQI score was found to be 9.4±5.4 which falls in the category of moderate impairment of QoL. **Table 2** demonstrates the DLQI scores calculated from the patients' responses. Although DLQI was higher in males, younger, unmarried, more educated, poorer economic status and in those with chronic lesions i.e. more than 6 months duration but these trends were not found to be statistically significant. **Table 3** shows the main

Table 1 Demographic and clinical features of the study population (n=98).

Feature	*Mean±SD*
Age (years)	27.4±10
Number of PW	5.8±2.8
Duration of PW (months)	9.2±12
Gender	
Male	55 (56%)
Female	43 (44%)
Marital Status	
Married	37 (37.8%)
Unmarried	61 (62.2%)
Monthly Income	
Less than 10,000 Pkr.	11 (11.2%)
10,000-50,000 Pkr.	59 (60.2%)
More than 50,000 Pkr.	28 (28.6%)
Educational Status	
Illiterate	8 (8.2%)
Middle	12 (12.2%)
Primary	4 (4.1%)
Matriculation or above	74 (75.5%)

Table 2 DLQI Scores (n=98).

DLQI Score	*Effect on QoL*	*n (%)*
0-1	No effect	3 (3.1%)
2-5	Mild effect	34 (34.7%)
6-10	Moderate effect	21 (21.4%)
11-20	Severe effect	38 (38.8%)
21-30	Very severe effect	2 (2%)

features of QoL adversely affected by PW. Furthermore, problems caused by treatment of PW also had negative impact on DLQI in three-quarters (75.5%) of the patients.

Discussion

Plantar warts (PW) can have a considerable impact on physical, social, psychological and emotional wellbeing of the patients. In addition, frequent visits to the hospital and recurrence may cause frustration and financial burden, leading to added psychological stress.[11,12]

In the present study, it was observed that PW had a strong negative impact on patients' life. Mean DLQI score in our study population was found to be 9.4±5.4 which means a moderate negative impact on QoL. Furthermore, it was noted that 62.2% subjects had a moderate to severe impairment of QoL due to PW.

Several researchers have recorded a higher value of DLQI in patients with viral warts than that calculated by the present study. An Egyptian study by Eman Salah found a mean DLQI of 13±5.8 using the same DLQI questionnaire as used in our study.[7] However, in this study, PW were not studied exclusively. So, the results observed by Salah are not a true representation of PW. Similarly, a Singaporean study documented a mean DLQI of 13.93±10.20 in patients with extra-genital warts. This is also higher than that seen in our study. The Singaporean researchers used a modified version of DLQI questionnaire i.e. Dermatology Life Quality Index for Viral Warts (DLQI-VW) comprising of fifteen (15) questions which may be the reason for the observed difference in results.[8] Additionally, Huang *et al*. reported a mean DLQI score of 13.2±4.9 specifically in recalcitrant PW.[13] The probable reason for this worse impact observed by Huang and co-workers is most likely their selection of patients with resistant PW.

A recent survey by Mohta from India, revealed a DLQI score of 10.69 in adults with PW which is similar to our findings.[14] DLQI may differ in different races, ethnicities and cultures. Also, various studies have reported that people with different cultural backgrounds have different positive adaptation rates and hence varying QoL.[15]

Table 3 Impairment of Quality of Life (QoL) (n=98).

Feature	*n (%)*
Pain and soreness	91 (92.9%)
Self-consciousness or social embarrassment	73 (74.5%)
Interference with everyday activities	61 (62.2%)
Difficulty in study or work activities	44 (44.9%)
Interference with social or leisure activities	41 (41.8%)
Effect on Interpersonal relationships	31 (31.6%)
Effect on Marital relationships	8 (8.2%)

Since there are several similarities between the Pakistani and Indian population, the Indian researchers have observed a comparative impact of PW on the QoL of their subjects.

The DLQI score was lower in less educated people in the present study, although this was not statistically significant. Leow and Oon from Singapore established a significant association of higher DLQI score with higher education.[8] Hence, lower literacy rates have a positive impact on QoL in patients with PW.

DLQI scores were found to be higher in younger population which may be attributable due to multiple factors. Younger subjects are more physically active, more likely to participate in sports activities, more likely to have a job or study, may be emotionally labile, and are usually more conscious about physical appearance, therefore, PW are more likely to impair their QoL. Similarly the higher DLQI scores observed in males are probably due to their increased physical activity. Patients with chronic lesions (longer than 6 months) also experienced more impairment of DLQI, most likely due to the added psychological stress of recalcitrant PW. However, none of these observed associations were found to be statistically significant.

Limitations A few limitations were identified in our study. Firstly, the sample size was small probably accounting for the lack of statistically significant correlation. It is, therefore, suggested that large population-based studies should be done in the future to establish these associations. Secondly, there was no control group to compare with the cases. Lastly, patients were not followed to re-assess DLQI after the lesions resolved or were treated. This could help to ascertain whether the negative impact on DLQI was solely due to PW or there were some further confounding factors involved.

Conclusion

Although PW are a benign and usually spontaneously healing skin condition, they cause significant impairment of HrQOL. Calculating the DLQI score may help to quantify this negative impact especially in young, male and educated subjects with chronic PW.

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